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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|--|------------------------|
| 10/560,596 | 06/30/2006 | Edward Someus | 9014-1003 | 7175 |
| <small>465</small> YOUNG & THOMPSON 209 Madison Street Suite 500 ALEXANDRIA, VA 22314 | | | <small>7590</small> EXAMINER WOOD, JARED M | |
| | | | <small>12/30/2008</small> ART UNIT 4181 | PAPER NUMBER |
| | | | <small>12/30/2008</small> MAIL DATE | DELIVERY MODE PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/560,596

Applicant(s)

SOMEUS, EDWARD

Examiner

JARED WOOD

Art Unit

4181

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/88)
- Paper No(s)/Mail Date 12/13/2005, 03/13/2006
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Status of Application

Acknowledgement is made of preliminary amendment filed 12/13/05. Upon entering the amendment, the claims 1-6 are canceled. New claims 7-17 are added. The claims 7-18 are pending and presented for the examination.

Information Disclosure Statement

The information disclosure statement filed 12/13/2005 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

Specification

35 U.S.C. 112, first paragraph, requires the specification to be written in "full, clear, concise, and exact terms." The specification is replete with terms which are not clear, concise and exact. The specification should be revised carefully in order to comply with 35 U.S.C. 112, first paragraph. Examples of some unclear, inexact or verbose terms used in the specification are: **The specification and claims have numerous and repeated grammatical and punctuation errors which render the specification cumbersome and difficult to understand. Applicant is also advised**

to alter decimal conventions according to generally accepted US conventions (i.e., 0,001 mm to 0.001 mm, and the like).

Claim Objections

Claims 11 and 14 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim.

Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. **The microorganisms of claim 8 must necessarily be of one or more strains and also must necessarily be made together or separately.**

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 92/08355 (Kosanke et al.) in view of Biomethanation of low pH petrochemical wastewater using up-flow fixed-film anaerobic bioreactors (Patel et al.) and Handbook of Hazardous Materials (Fingas).

As to claim 7, Kosanke teaches solid carrier-based microbial inoculants comprising soil microorganisms colonized on at least the surface of a solid carrier at a temperature of 20-30° C.

As to claim 8, Kosanke teaches a process for culturing microorganisms on a carrier comprising culturing (fermenting) the bacteria (microorganisms) in a sucrose broth growth medium (liquid), **which also reads on claim 9**, (page 6, line 30) followed by introducing a powdered or granular carrier to the bacteria and growth mixture. The new mixture is the fermented (solid-state fermentation) which results in colonization of the carrier by the bacteria (page 7, line 5). The mixture is then dried at a temperature range of 20-30° C until the moisture level (water content) is reduced to below 15 wt% (page 7, line 25), **which also reads on claims 10 and 13**. It is noted that Kosanke has declared that the process can be used with any other suitable carrier material for the microorganisms of choice (page 10, line 7).

As to claims 11 and 14, no additional limitations have been introduced by these claims over the parent claims 8 and 9 and are, therefore, likewise rejected.

As to claims 12 and 15-17, Kosanke teaches alternatively introducing an organic amendment to the carrier prior to introducing the bacterial cultures to the carrier (pre-impregnated with a nutrient) to achieve optimum bacteria growth (page 6, line 4 and examples 6 and 8).

Kosanke doesn't expressly mention the use of bone char as a carrier or the steps of producing or the physical properties of bone char.

Patel teaches a composition comprising microorganisms retained (carried) on bone char (animal bone charcoal) (abstract), which inherently contains phosphorus as evidenced by the Handbook of Hazardous Materials (section on bone char), having a specific surface area of 53.35 m²/g and a pore specific volume of 0.244 (table 1), **which reads on claim 7**. It is well expected that the bone char would have a grain size of between 1 μm and 1 cm in diameter (if the grain size was <1 μm, a porous material would be expected to have a much higher surface area and if >1 cm a much smaller surface area) and a pore size between 10 nm and 60 μm as evidenced by table 15.9 of the Handbook of Hazardous Materials.

Patel also teaches that bone char is ideal for use as a carrier material for microorganisms due to its physical characteristics such as roughness, porosity, large surface area, and high physio-chemical interactions with microbes (page 71, beginning four lines from the end of the page), **which reads on claim 8**. It was known at the time of invention that bone char is produced by carbonizing selected grades of animal bones in an airtight retort at 500-700° C as evidenced by the Handbook of Hazardous Materials. The bone char would obviously be cooled to a temperature of at most 50° C to allow easy handling of the bone char.

It would have been obvious to one of ordinary skill in the art at the time of invention to use bone char, because of its ideal physical characteristics, as taught by Patel as a carrier for microorganisms in the process of Kosanke in order to ensure optimum bacteria colonization of the carrier.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. **Phosphate-solubilizing microorganisms associated with the rhizosphere of mangrove in a semiarid coastal lagoon (Vasquez et al.).**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JARED WOOD whose telephone number is (571)270-5911. The examiner can normally be reached on Monday - Friday, 7:30 am - 5:00 pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vickie Kim can be reached on (571)272-0579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JARED WOOD/
Examiner, Art Unit 4181

/Vickie Kim/

Supervisory Patent Examiner, Art Unit 4181